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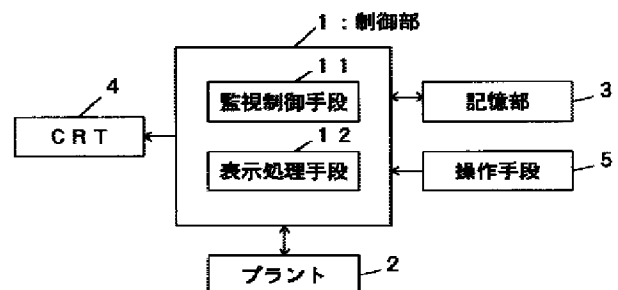
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(54)【発明の名称】 計器図表示装置及び計器図表示プログラムを記録した記録媒体

(57)【要約】

【課題】 計器図の大きさを自由に設定できる計器図表示装置及び計器図表示プログラムを記録した記録媒体を実現することを目的にする。

【解決手段】 本発明は、計器図を表示部に表示する計器図表示装置に改良を加えたものである。本装置は、スケーリング指示に基づいて決められた描画データと呼び出し、大きさの演算を行い、計器図の表示部への表示処理を行う表示処理手段を有することを特徴とする装置である。



**【特許請求の範囲】**

【請求項1】 計器図を表示部に表示する計器図表示装置において、

スケーリング指示に基づいて決められた描画データを呼び出し、大きさの演算を行い、計器図の前記表示部への表示処理を行う表示処理手段を有することを特徴とする計器図表示装置。

【請求項2】 表示処理手段は、スケーリングに対応して、計器図に用いるビットマップ及びフォントを選択することを特徴とする請求項1記載の計器図表示装置。

【請求項3】 表示処理手段は、計器図の縦横比率を同一にしたことを特徴とする請求項1、2記載の計器図表示装置。

【請求項4】 表示処理手段は、計器図に通常計器図とコンパクト計器図とを設け、選択可能にしたことを特徴とする請求項1～3記載の計器図表示装置。

【請求項5】 プラント監視装置に用いたことを特徴とする請求項1～4記載の計器図表示装置。

【請求項6】 計器図を表示部に表示する計器図表示プログラムを記録した記録媒体において、スケーリング指示に基づいて決められた描画情報を呼び出し、大きさの演算を行い、計器図の前記表示部への表示処理を行うことを特徴とする計器図表示プログラムを記録した記録媒体。

【請求項7】 スケーリングに対応して、計器図に用いるビットマップ及びフォントを選択することを特徴とする請求項6記載の計器図表示プログラムを記録した記録媒体。

【請求項8】 計器図の縦横比率を同一にしたことを特徴とする請求項6、7記載の計器図表示プログラムを記録した記録媒体。

【請求項9】 計器図に通常計器図とコンパクト計器図とを設け、選択可能にしたことを特徴とする請求項6～8記載の計器図表示プログラムを記録した記録媒体。

【請求項10】 プラント監視プログラムを記録した記録媒体に用いたことを特徴とする請求項6～9記載の計器図表示プログラムを記録した記録媒体。

**【発明の詳細な説明】****【0001】**

【発明の属する技術分野】本発明は、計器図を表示する計器図表示装置及び計器図表示プログラムを記録した記録媒体に関し、特に、計器図の大きさを自由に設定できる計器図表示装置及び計器図表示プログラムを記憶した記録媒体に関するものである。

**【0002】**

【従来の技術】プラント監視装置に用いられる計器図は、主にスタートアップ時に使用されることを目的として、全画面と全画面の1/4サイズのハーフ画面の2種類に合わせた計器図が用意にされていた。

【0003】このような画面を図6に示す。aは全画面

で、bはハーフ画面である。この図に示される画面は、コントロールグループウィンドウ（画面）で、エンジニアが設定した複数の計器の計器図が表示される。このように、固定サイズの計器図であり、解像度等を意識する必要がなかった。

【0004】画面の種類として、その他に、フェースプレートウィンドウ、チューニングウィンドウがある。フェースプレートウィンドウは、全画面上でオペレータが呼び出した計器の計器図を1つだけ表示するものである。チューニングウィンドウは、全画面とハーフ画面上で、オペレータが呼び出した計器の計器図は、計器の詳細情報も含めて表示するものである。

**【0005】**

【発明が解決しようとする課題】このように計器図は、スタートアップ時を考慮して設計されたものであり、プラントの監視に用いるには不適切であった。つまり、通常、オペレータは、プラントを概略図で表示されたグラフィックウィンドウで、プラントの監視を行っている。この画面に、重要な計器の計器図を加えて表示させるには、固定の大きさの計器図では、プラントの概略図の隙間に表示させることができないという場合があった。

【0006】また、計器図が固定のウィンドウ上で固定の位置とサイズで表示するため、すべて固定であり、グラフィック上で汎用的に表示できなく、ユーザーの好みにあったエンジニアリングを行うことができなかった。

【0007】そして、近年の画面表示では、複数の画面を自由に大きさを調節して、同時に表示させ、プラントの監視を行うことが要求され、固定サイズの計器図では、この要求を満たすことができなかった。

【0008】そこで、本発明の目的は、計器図の大きさを自由に設定できる計器図表示装置及び計器図表示プログラムを記録した記録媒体を実現することにある。

**【0009】**

【課題を解決するための手段】本発明は、計器図を表示部に表示する計器図表示装置において、スケーリング指示に基づいて決められた描画データを呼び出し、大きさの演算を行い、計器図の前記表示部への表示処理を行う表示処理手段を有することを特徴とするものである。

【0010】このような本発明では、表示処理手段は、スケーリング指示に基づいて決められた描画データを呼び出し、大きさの演算を行い、計器図の表示部への表示処理を行う。

**【0011】**

【発明の実施の形態】以下図面を用いて本発明を説明する。図1は本発明の一実施例を示した構成図である。図において、制御部1は、プラント2の監視と制御とを行う。そして、制御部1は、監視結果に基づいて、記憶部3に記憶された描画データにより表示部（CRT）4に各種画面の表示を行う。操作手段5は、例えば、キーボードまたはマウスで、制御部1を操作する。

【0012】制御部1は、監視制御手段11と表示処理手段12とからなる。また、制御部1は、一般にコンピュータで構成され、監視制御手段11、表示処理手段12は、一般にプログラムで記述されている。そして、このプログラムは、一般に記録媒体（FDD、CD-ROM等）からコンピュータにインストールされる。

【0013】監視制御手段11は、プラント2の監視を行うと共に、プラント2の制御を行う。

【0014】表示処理手段12は、監視制御手段11からの監視結果を入力し、スケーリング指示に基づいて決められた描画データを記憶部3から呼び出し、大きさの演算を行い、計器図の表示部4への表示処理を行う。また、各種画面の表示処理も表示処理手段12は行っている。

【0015】このような装置の動作を以下で説明する。図2は図1の装置の動作を示したフローチャートである。図3は図1の装置の描画データ対照表を示した図である。この描画データ対照表は、記憶部3に記憶されている。

【0016】操作手段5により、計器図の種類、または、サイズの変更あるいは事前指定を表示処理手段12に行う。表示処理手段12は、計器図表示がコンパクトサイズかどうかを判断する（S1）。

【0017】コンパクトサイズるとき、ウィンドウサイズに対応して作成された計器図のスケールの描画データ対照表に基づいて、SL（Scale Large）ウィンドウかどうかを判断する（S2）。SLウィンドウのとき、描画データ対照表のビットマップとフォントとに基づいて、コンパクト計器図のSLウィンドウの描画データを記憶部3から収集する（S3）。SLウィンドウでないとき、描画データ対照表のビットマップとフォントとに基づいて、コンパクト計器図のSM（Scale Mini）ウィンドウの描画データを記憶部3から収集する（S4）。

【0018】コンパクトサイズでないとき、ウィンドウサイズに対応して作成された計器図のスケールの描画データ対照表に基づいて、SLウィンドウかどうかを判断する（S5）。SLウィンドウのとき、描画データ対照表のビットマップとフォントとに基づいて、通常計器図のSLウィンドウの描画データを記憶部3から収集する（S6）。SLウィンドウでないとき、描画データ対照表のビットマップとフォントとに基づいて、通常計器図のSMウィンドウの描画データを記憶部3から収集する（S7）。

【0019】そして、描画データ収集後、計器図の縦横の比率固定で、例えば、横幅を基準に縮尺計算を行う（S8）。すなわち、（演算後の長さ）＝（演算前長さ）×（計器図呼び出し時の横幅）÷（計器図基準の横幅）の演算を行う。

【0020】描画データと縮尺計算とを用いて各部品の描画を表示部4に行う（S9）。また、監視制御手段1

1による監視結果により、表示処理手段12は計器図の描画（例えば、数値やスケールバー）を変更する。

【0021】ここで、SLウィンドウとSMウィンドウという種類を設けたが、これは、ウィンドウサイズにより、多少デザインを変えたためである。SLウィンドウは、ウィンドウサイズ1024×768ドットを基準としてデザインされ、SMウィンドウは、ウィンドウサイズ640×480ドットを基準としてデザインされている。このウィンドウのデザインの違いを図4を用いて説明する。aはSMウィンドウの計器図で、bはSLウィンドウの計器図である。このウィンドウの違いは、計器図bは横線b1～b3を有しているが、計器図aは横線a1しか有していない。また、ビットマップであるが、矢印イ等が描画データ対照表に示されるサイズの矢印イ等が、表示処理手段12により、記憶部3から描画データとして呼び出され、表示部4に表示される。

【0022】次に具体的な例を用いて本発明の動作を説明する。例えば、ウィンドウサイズが1600×1200ドットと1280×1024ドットとの間だった場合、描画データ対照表より、デザインはSLウィンドウが選ばれ、ビットマップは24×24ドットで、フォントサイズは20を基準にサイズに応じてスケーリングされる。この情報に基づいた描画データが収集される。そして、縮尺演算が行われ、表示部4に描画が行われる。

【0023】また、図4にグラフィックウィンドウの表示例を示す。図において、aは通常計器図、bはコンパクト計器図である。コンパクト計器図bは、通常計器図aの1/2の縦幅で設計され、通常計器図aから、タグコメントa1とデジタル値（PV（プロセス値）、SV（設定値）、MV（操作値））a2とエントリーゾーン呼び出しボタンa3とをなくしたものである。これにより、コンパクト計器図bは、監視を目的として、状態の表示部分が強調される。

【0024】このように、表示処理手段12がスケーリングに対応して、描画データを呼び出すので、計器図のサイズを変更することができる。

【0025】また、計器図を自由な位置とサイズで配置できるので、計器図がグラフィックウィンドウ上の汎用部品としても使用できるため、ユーザの好みにあったエンジニアリングを行うことができる。

【0026】そして、スケーリングに対応して、フォントあるいはビットマップが選ばれるので、描画が崩れることがない。つまり、計器図の描画が崩れない。

【0027】さらに、計器図のサイズの縦横比率を固定にしたので、計器図の描画が一定のデザインで表示できる。つまり、デザインが一定であるので、サイズが変更になっても、認識がしやすい。

【0028】その上、コンパクトサイズの計器図を設けたので、スペースを取らずに計器の監視を行うことができる。また、グラフィックウィンドウ等にスペースを取

らずに設けることができるので、重要な計器の監視を行うことができる。そして、近年の複数画面の表示の要求に答えることができる。

【0029】なお、本発明はこれに限定されるものではなく、以下のようなものでもよい。描画データ対照表を記憶部3に記憶する構成を示したが、表示処理手段12の内部に組み込み構成でもよい。

【0030】

【発明の効果】本発明によれば、以下のような効果がある。請求項1、6によれば、スケーリングに対応して、描画データ呼び出すので、計器図のサイズを変更することができる。また、計器図を自由な位置とサイズで配置できるので、計器図がグラフィックウィンドウ上の汎用部品としても使用できるため、ユーザの好みにあったエンジニアリングを行うことができる。

【0031】請求項2、7によれば、スケーリングに対応して、フォントあるいはビットマップが選ばれるので、描画が崩れることがない。つまり、計器図の描画が崩れない。

【0032】請求項3、8によれば、計器図のサイズの縦横比率を固定にしたので、計器図の描画が一定のデザインで表示できる。つまり、デザインが一定であるので、サイズが変更になっても、認識がしやすい。

【0033】請求項4、9によれば、コンパクトサイズの計器図を設けたので、スペースを取らずに計器の監視

を行うことができる。

【0034】請求項5、10によれば、計器図の大きさを自由にできるので、グラフィックウィンドウ等に計器図を設けることができ、重要な計器図の監視を行うことができる。また、近年の複数画面の表示の要求に答えることができる。

【図面の簡単な説明】

【図1】本発明の一実施例を示した構成図である。

【図2】図1の装置の動作を示したフローチャートである。

【図3】図1の装置の描画データ対照表を示した図である。

【図4】図1の装置の表示例を示した図である。

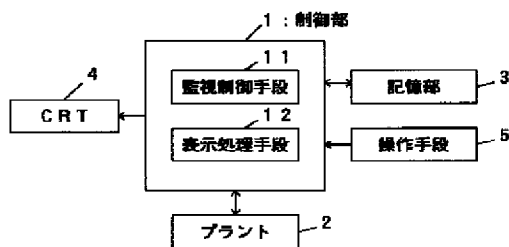
【図5】図1の装置の表示例を示した図である。

【図6】従来のプラント監視装置の表示例を示した図である。

【符号の説明】

- 1 制御部
- 2 プラント
- 3 記憶部
- 4 表示部
- 5 操作手段
- 11 監視制御手段
- 12 表示処理手段

【図1】



【図3】

|          |           |   |           |   |          |       |         |   |         |       |
|----------|-----------|---|-----------|---|----------|-------|---------|---|---------|-------|
| ウィンドウサイズ | 1600x1200 | > | 1280x1024 | > | 1024x768 | >     | 800x600 | > | 640x480 | >     |
| ビットマップ   | 24x24     | ← | ←         | ← | ←        | 16x16 | ←       | ← | ←       | 12x12 |
| フォント     | *1        |   |           |   | 20       | *1    |         |   | 16      | *2    |
| デザイン     | SL        |   | SL        |   | SL       |       | SL      |   | SL      |       |

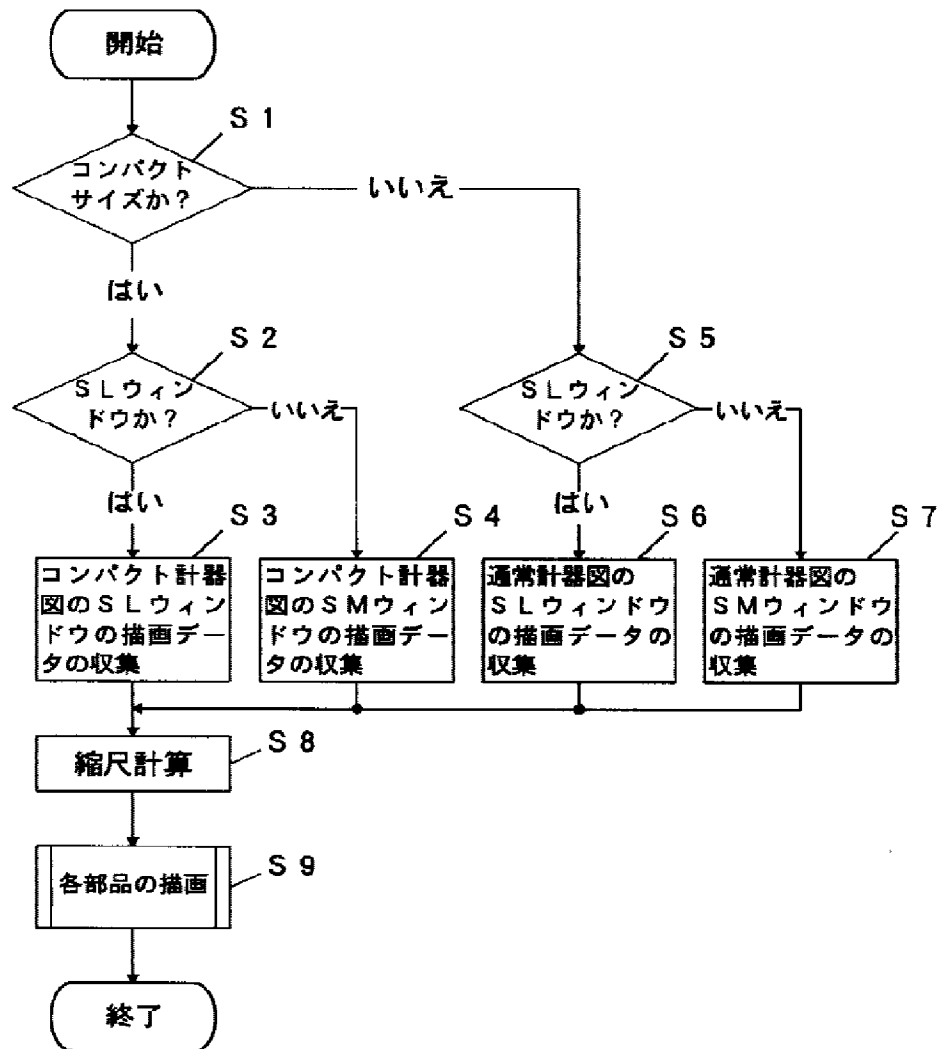
SL: ウィンドウのサイズが 1024x768 でデザインしたもの

SM: ウィンドウのサイズが 640x480 でデザインしたもの

\*1: SL のときのフォントサイズ 20 を基準に計器図のサイズに応じてスケーリングする。

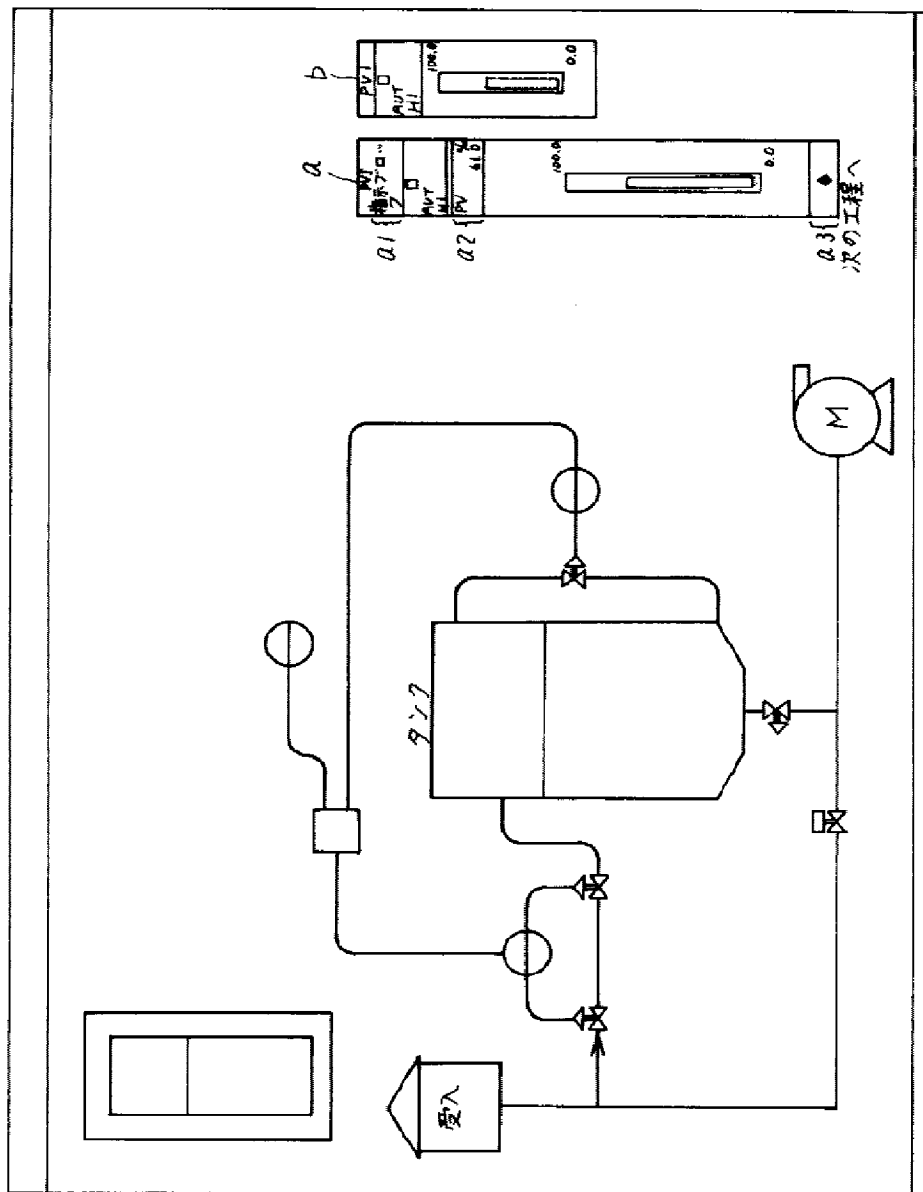
\*2: SM のときのフォントサイズ 16 を基準に計器図のサイズに応じてスケーリングする。

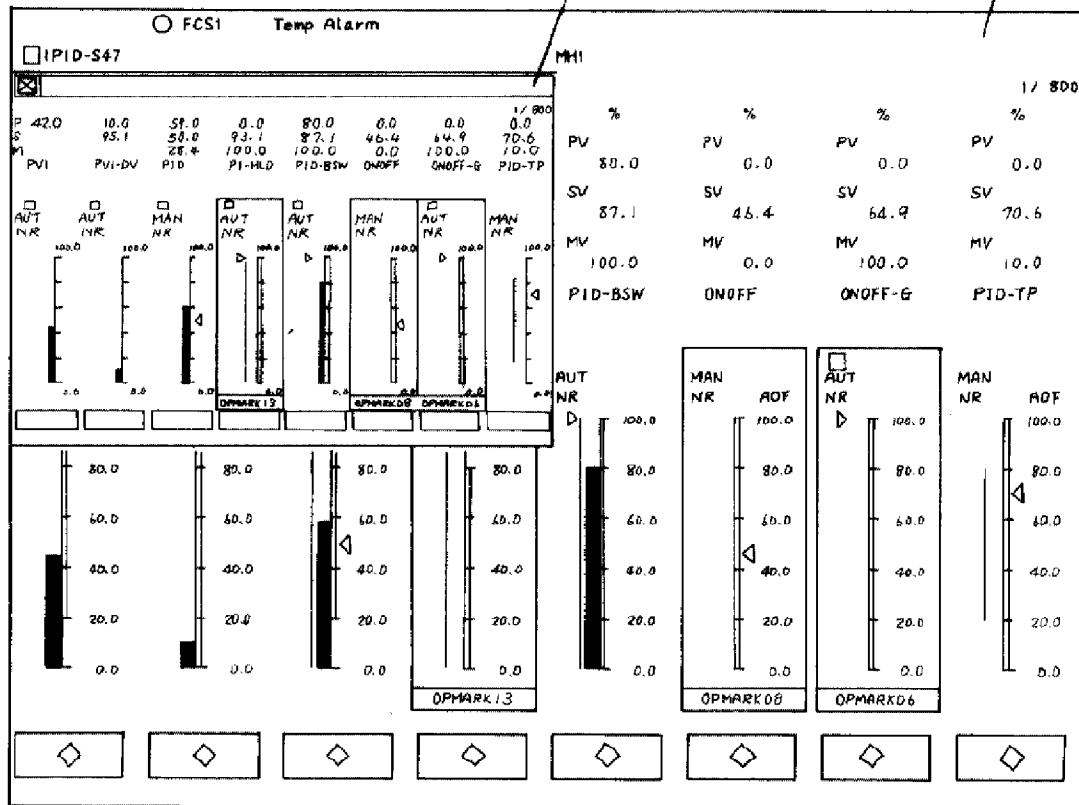
【図2】



|  |     |     |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |
|--|-----|-----|-----|----|---|-----|----|---|-----|----|---|-----|----|---|-----|--|-----|---|-----|----|---|-----|----|---|-----|----|---|-----|----|---|-----|--|-----|---|-----|----|---|-----|----|---|-----|----|---|-----|----|---|-----|--|-----|---|-----|----|---|-----|----|---|-----|----|---|-----|----|---|-----|--|-----|---|-----|----|---|-----|----|---|-----|----|---|-----|----|---|-----|--|-----|---|-----|----|---|-----|----|---|-----|----|---|-----|----|---|-----|--|-----|---|-----|----|---|-----|----|---|-----|----|---|-----|----|---|-----|--|-----|---|-----|----|---|-----|----|---|-----|----|---|-----|----|---|-----|
| PID-ALARM01<br>PV-MV (01)<br>for Alarm<br><input type="checkbox"/> <table border="1"> <tr><td>MAN</td><td>%</td><td>0.0</td></tr> <tr><td>NR</td><td>%</td><td>0.0</td></tr> <tr><td>PV</td><td>%</td><td>0.0</td></tr> <tr><td>SV</td><td>%</td><td>0.0</td></tr> <tr><td>MV</td><td>%</td><td>0.0</td></tr> </table> | MAN | %   | 0.0 | NR | % | 0.0 | PV | % | 0.0 | SV | % | 0.0 | MV | % | 0.0 | PID-ALARM02<br>PV-MV (02)<br>for Alarm<br><input type="checkbox"/> <table border="1"> <tr><td>MAN</td><td>%</td><td>0.0</td></tr> <tr><td>NR</td><td>%</td><td>0.0</td></tr> <tr><td>PV</td><td>%</td><td>0.0</td></tr> <tr><td>SV</td><td>%</td><td>0.0</td></tr> <tr><td>MV</td><td>%</td><td>0.0</td></tr> </table> | MAN | % | 0.0 | NR | % | 0.0 | PV | % | 0.0 | SV | % | 0.0 | MV | % | 0.0 | PID-ALARM03<br>PV-MV (03)<br>for Alarm<br><input type="checkbox"/> <table border="1"> <tr><td>MAN</td><td>%</td><td>0.0</td></tr> <tr><td>NR</td><td>%</td><td>0.0</td></tr> <tr><td>PV</td><td>%</td><td>0.0</td></tr> <tr><td>SV</td><td>%</td><td>0.0</td></tr> <tr><td>MV</td><td>%</td><td>0.0</td></tr> </table> | MAN | % | 0.0 | NR | % | 0.0 | PV | % | 0.0 | SV | % | 0.0 | MV | % | 0.0 | PID-ALARM04<br>PV-MV (04)<br>for Alarm<br><input type="checkbox"/> <table border="1"> <tr><td>MAN</td><td>%</td><td>0.0</td></tr> <tr><td>NR</td><td>%</td><td>0.0</td></tr> <tr><td>PV</td><td>%</td><td>0.0</td></tr> <tr><td>SV</td><td>%</td><td>0.0</td></tr> <tr><td>MV</td><td>%</td><td>0.0</td></tr> </table> | MAN | % | 0.0 | NR | % | 0.0 | PV | % | 0.0 | SV | % | 0.0 | MV | % | 0.0 | PID-ALARM05<br>PV-MV (05)<br>for Alarm<br><input type="checkbox"/> <table border="1"> <tr><td>MAN</td><td>%</td><td>0.0</td></tr> <tr><td>NR</td><td>%</td><td>0.0</td></tr> <tr><td>PV</td><td>%</td><td>0.0</td></tr> <tr><td>SV</td><td>%</td><td>0.0</td></tr> <tr><td>MV</td><td>%</td><td>0.0</td></tr> </table> | MAN | % | 0.0 | NR | % | 0.0 | PV | % | 0.0 | SV | % | 0.0 | MV | % | 0.0 | PID-ALARM06<br>PV-MV (06)<br>for Alarm<br><input type="checkbox"/> <table border="1"> <tr><td>MAN</td><td>%</td><td>0.0</td></tr> <tr><td>NR</td><td>%</td><td>0.0</td></tr> <tr><td>PV</td><td>%</td><td>0.0</td></tr> <tr><td>SV</td><td>%</td><td>0.0</td></tr> <tr><td>MV</td><td>%</td><td>0.0</td></tr> </table> | MAN | % | 0.0 | NR | % | 0.0 | PV | % | 0.0 | SV | % | 0.0 | MV | % | 0.0 | PID-ALARM07<br>PV-MV (07)<br>for Alarm<br><input type="checkbox"/> <table border="1"> <tr><td>MAN</td><td>%</td><td>0.0</td></tr> <tr><td>NR</td><td>%</td><td>0.0</td></tr> <tr><td>PV</td><td>%</td><td>0.0</td></tr> <tr><td>SV</td><td>%</td><td>0.0</td></tr> <tr><td>MV</td><td>%</td><td>0.0</td></tr> </table> | MAN | % | 0.0 | NR | % | 0.0 | PV | % | 0.0 | SV | % | 0.0 | MV | % | 0.0 | PID-ALARM08<br>PV-MV (08)<br>for Alarm<br><input type="checkbox"/> <table border="1"> <tr><td>MAN</td><td>%</td><td>0.0</td></tr> <tr><td>NR</td><td>%</td><td>0.0</td></tr> <tr><td>PV</td><td>%</td><td>0.0</td></tr> <tr><td>SV</td><td>%</td><td>0.0</td></tr> <tr><td>MV</td><td>%</td><td>0.0</td></tr> </table> | MAN | % | 0.0 | NR | % | 0.0 | PV | % | 0.0 | SV | % | 0.0 | MV | % | 0.0 |
| MAN  | %   | 0.0 |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |
| NR   | %   | 0.0 |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |
| PV   | %   | 0.0 |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |
| SV   | %   | 0.0 |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |
| MV   | %   | 0.0 |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |
| MAN  | %   | 0.0 |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |
| NR   | %   | 0.0 |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |
| PV   | %   | 0.0 |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |
| SV   | %   | 0.0 |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |
| MV   | %   | 0.0 |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |
| MAN  | %   | 0.0 |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |
| NR   | %   | 0.0 |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |
| PV   | %   | 0.0 |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |
| SV   | %   | 0.0 |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |
| MV   | %   | 0.0 |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |
| MAN  | %   | 0.0 |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |
| NR   | %   | 0.0 |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |
| PV   | %   | 0.0 |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |
| SV   | %   | 0.0 |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |
| MV   | %   | 0.0 |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |
| MAN  | %   | 0.0 |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |
| NR   | %   | 0.0 |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |
| PV   | %   | 0.0 |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |
| SV   | %   | 0.0 |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |
| MV   | %   | 0.0 |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |
| MAN  | %   | 0.0 |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |
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| SV   | %   | 0.0 |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |
| MV   | %   | 0.0 |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |
| MAN  | %   | 0.0 |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |
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| PV   | %   | 0.0 |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |
| SV   | %   | 0.0 |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |
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| MAN  | %   | 0.0 |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |
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| SV   | %   | 0.0 |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |
| MV   | %   | 0.0 |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |  |     |   |     |    |   |     |    |   |     |    |   |     |    |   |     |

【図5】







# PATENT ABSTRACTS OF JAPAN

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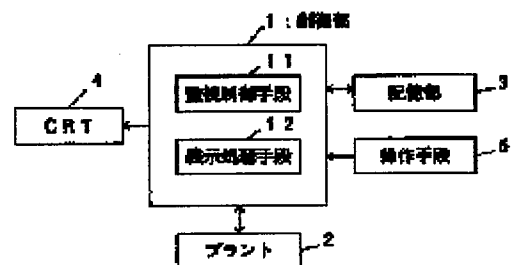
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## (54) INSTRUMENT CHART DISPLAY DEVICE AND RECORDING MEDIUM RECORDING INSTRUMENT CHART DISPLAY PROGRAM

(57)Abstract:

PROBLEM TO BE SOLVED: To freely set the size of an instrument chart by calling graphic display data that are decided based on a scaling instruction, performing a size operation and performing the display processing of an instrument chart on a displaying part.

SOLUTION: An operating means 5 changes the kind or size of the instrument chart or designates a display processing means 12 beforehand. The means 12 judges instrument chart display and collects graphic display data of SL(Scale Large) or SM(Scale Mini) windows of compact and normal instrument charts based on graphical display data cross-reference for scales of the instrument chart that is prepared in accordance with a window size from a storing part 3. For instance, scale calculation is performed with horizontal width as reference after collecting graphic display data. The graphic display of each part is shown on a displaying part 4 by using graphic display data and scale calculation. Also, the means 12 changes the graphic display of the instrument chart (e.g. numeric value and a scale bar) according to the result monitored by a monitoring control means 11.



## CLAIMS

[Claim(s)]

[Claim 1]A meter figure display having a display processing means which calls drawing data decided based on scaling directions in a meter figure display which displays a meter figure on an indicator, calculates a size, and performs display processing to said indicator of a meter figure.

[Claim 2]The meter figure display according to claim 1, wherein a display processing means chooses a bit map and a font which are used for a meter figure corresponding to scaling.

[Claim 3]Claim 1, a meter figure display of two statements, wherein a display processing means makes the same a horizontal-to-vertical ratio of a meter figure.

[Claim 4]The meter figure display according to claim 1 to 3, wherein a display processing means usually established a meter figure and a compact meter figure in a meter figure and makes them selectable.

[Claim 5]The meter figure display according to claim 1 to 4 using for a plant monitoring device.

[Claim 6]A recording medium which recorded a meter figure display program calling drawing information decided based on scaling directions in a recording medium which recorded a meter figure display program which displays a meter figure on an indicator, calculating a size, and performing display processing to said indicator of a meter figure.

[Claim 7]A recording medium which recorded the meter figure display program according to claim 6 choosing a bit map and a font which are used for a meter figure corresponding to scaling.

[Claim 8]Claim 6 making the same a horizontal-to-vertical ratio of a meter figure, a recording medium which recorded a meter figure display program of seven statements.

[Claim 9]A recording medium which recorded the meter figure display program according to claim 6 to 8 having usually established a meter figure and a compact meter figure in a meter figure, and making it selectable.

[Claim 10]A recording medium which recorded the meter figure display program according to claim 6 to 9 using for a recording medium which recorded a plant monitoring program.

## DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the recording medium which memorized the meter figure display and meter figure display program which can set up the size of a meter figure freely especially about the recording medium which recorded the meter figure display and meter figure display program which displays a meter figure.

[0002]

[Description of the Prior Art] The meter figure set by two kinds of half screens of 1/4 size of the full screen and the full screen for the purpose of the meter figure used for a plant monitoring device mainly being used at the time of start-up was made preparation.

[0003] Such a screen is shown in drawing 6. a is the full screen and b is a half screen. The screen shown in this figure is a control group window (screen), and the meter figure of two or more meters which the engineer set up is displayed. Thus, he is a meter figure of fixed size and did not need to be conscious of resolution etc.

[0004] It is considered as the kind of screen, in addition there are a face plate window and a tuning window. A face plate window displays only one meter figure of the meter which the operator called on the full screen. The meter figure of the meter in which the operator called the tuning window on the full screen and a half screen is displayed also including the detailed information of a meter.

[0005]

[Problem(s) to be Solved by the Invention] Thus, the meter figure was designed in consideration of the time of start-up, and was unsuitable for using for the surveillance of a plant. That is, an operator is the graphic window displayed in the plant in the schematic diagram, and is usually supervising the plant. In order to have added and displayed the meter figure of the important meter on this screen, in the meter figure of a fixed size, there was a

case where it was said that it cannot make it display on the crevice between the schematic diagrams of a plant.

[0006]Since a meter figure displayed in a fixed position and size on a fixed window, it was immobilization altogether, and it could not display general-purpose on graphics and the engineering which suited a user's liking was not able to be performed.

[0007]And in a screen display in recent years, a size is adjusted freely, two or more screens were displayed simultaneously, it was required that a plant should have been supervised and it was not able to fill this demand with the meter figure of fixed size.

[0008]Then, the purpose of this invention is to realize the recording medium which recorded the meter figure display and meter figure display program which can set up the size of a meter figure freely.

[0009]

[Means for Solving the Problem]In a meter figure display which displays a meter figure on an indicator, this invention calls drawing data decided based on scaling directions, calculates a size, and has a display processing means which performs display processing to said indicator of a meter figure.

[0010]In such this invention, a display processing means calls drawing data decided based on scaling directions, calculates a size, and performs display processing to an indicator of a meter figure.

[0011]

[Embodiment of the Invention]This invention is explained using a drawing below. Drawing 1 is a lineblock diagram showing one example of this invention. In a figure, the control section 1 performs the surveillance and control of the plant 2. And the control section 1 displays various screens on the indicator (CRT) 4 with the drawing data memorized by the storage parts store 3 based on a monitored result. The control means 5 is a keyboard or a mouse, and operates the control section 1, for example.

[0012]The control section 1 consists of the supervisor control means 11 and the display processing means 12. Generally the control section 1 comprises a computer and, generally the supervisor control means 11 and the display processing means 12 are described by the program. And generally this program is installed in a computer from recording media (FDD, CD-ROM, etc.).

[0013]The supervisor control means 11 supervises the plant 2, and it controls the plant 2.

[0014]The display processing means 12 inputs the monitored result from the supervisor control means 11, calls the drawing data decided based on scaling directions from the storage parts store 3, calculates a size, and performs display processing to the indicator 4 of a meter figure. The display processing means 12 is also performing display processing of various screens.

[0015]Operation of such a device is explained below. Drawing 2 is the flow chart which showed

operation of the device of drawing 1. Drawing 3 is a figure showing the drawing data contrast table of the device of drawing 1. This drawing data contrast table is memorized by the storage parts store 3.

[0016]The control means 5 performs the kind of meter figure, change of size, or prior specification to the display processing means 12. The display processing means 12 judges whether a meter figure display is compact size (S1).

[0017]Based on the drawing data contrast table of the scale of a meter figure created corresponding to window size, it is judged at the time of compact size whether it is SL (Scale Large) window (S2). Based on the bit map and font of a drawing data contrast table, the drawing data of SL window of a compact meter figure is collected from the storage parts store 3 at the time of SL window (S3). When it is not SL window, based on the bit map and font of a drawing data contrast table, the drawing data of SM (Scale Mini) window of a compact meter figure is collected from the storage parts store 3 (S4).

[0018]When it is not compact size, based on the drawing data contrast table of the scale of a meter figure created corresponding to window size, it is judged whether it is SL window (S5). Based on the bit map and font of a drawing data contrast table, the drawing data of SL window of a meter figure is usually collected from the storage parts store 3 at the time of SL window (S6). When it is not SL window, based on the bit map and font of a drawing data contrast table, the drawing data of SM window of a meter figure is usually collected from the storage parts store 3 (S7).

[0019]And it is ratio immobilization of a meter figure in every direction after drawing data collection, and contraction scale calculation is performed on the basis of breadth, for example (S8). That is, 
$$\text{ratio} = \frac{(\text{length after operation}) \times (\text{breadth at time of meter figure call})}{(\text{breadth of a meter figure standard})}$$
 is calculated.

[0020]Each part article is drawn to the indicator 4 using drawing data and contraction scale calculation (S9). The display processing means 12 changes drawing (for example, a numerical value and a scale bar) of a meter figure by the monitored result by the supervisor control means 11.

[0021]Although the kind of SL window and SM window was established here, this is because the design was somewhat changed with window size. SL window is designed on the basis of 1024x768 dots of window sizes, and SM window is designed on the basis of 640x480 dots of window sizes. The difference in the design of this window is explained using drawing 4. a is a meter figure of SM window and b is a meter figure of SL window. Although, as for the difference in this window, meter figure b has the horizontal lines b1-b3, only the horizontal line a1 has meter figure a. Although it is a bit map, arrow l etc. of the size arrow l etc. are indicated to be to a drawing data contrast table are called as drawing data from the storage parts store 3, and are displayed on the indicator 4 by the display processing means 12.

[0022]Next, operation of this invention is explained using a concrete example. For example, when window size is for 1600x1200 dots and 1280x1024 dots, from a drawing data contrast table, as for a design, SL window is chosen, the number of bit maps is 24x24, and scaling of the font size is carried out according to size on the basis of 20. The drawing data based on this information is collected. And a contraction scale operation is performed and drawing is performed to the indicator 4.

[0023]The display example of a graphic window is shown in drawing 4. In a figure, a is a meter figure and b is usually a compact meter figure. Compact meter figure b is usually designed with one half of the dips of meter figure a, and usually loses the tag comment a1, the digital value (PV (process value), SV (preset value), MV (operated value)) a2, and the entry zone call button a3 from the meter figure a. Thereby, as for compact meter figure b, the display portion of a state is emphasized for the purpose of surveillance.

[0024]Thus, since the display processing means 12 calls drawing data corresponding to scaling, the size of a meter figure can be changed.

[0025]Since a meter figure can be arranged in a free position and size and a meter figure can use it also as multi-use parts on a graphic window, the engineering which suited a user's liking can be performed.

[0026]And since a font or a bit map is chosen corresponding to scaling, drawing does not collapse. That is, drawing of a meter figure does not collapse.

[0027]Since the horizontal-to-vertical ratio of the size of a meter figure was made immobilization, drawing of a meter figure can express as a fixed design. That is, since the design is constant, even if size is changed, it is easy to carry out recognition.

[0028]Since the meter figure of compact size was moreover provided, a meter can be supervised without taking a space. Since it can provide in a graphic window etc., without taking a space, an important meter can be supervised. And it can reply to the demand of a display of two or more screens in recent years.

[0029]This invention may not be limited to this and may be as follows. Although the composition which memorizes a drawing data contrast table to the storage parts store 3 was shown, it may include in the inside of the display processing means 12, and composition may be used.

[0030]

[Effect of the Invention]According to this invention, there are the following effects. Since drawing data is called corresponding to scaling according to claims 1 and 6, the size of a meter figure can be changed. Since a meter figure can be arranged in a free position and size and a meter figure can use it also as multi-use parts on a graphic window, the engineering which suited a user's liking can be performed.

[0031]Since a font or a bit map is chosen corresponding to scaling according to claims 2 and 7,

drawing does not collapse. That is, drawing of a meter figure does not collapse.

[0032] Since the horizontal-to-vertical ratio of the size of a meter figure was made immobilization according to claims 3 and 8, drawing of a meter figure can express as a fixed design. That is, since the design is constant, even if size is changed, it is easy to carry out recognition.

[0033] Since the meter figure of compact size was provided according to claims 4 and 9, a meter can be supervised without taking a space.

[0034] Since the size of a meter figure can be freed according to claims 5 and 10, a meter figure can be established in a graphic window etc. and the important surveillance of a meter figure can be performed. It can reply to the demand of a display of two or more screens in recent years.



## **TECHNICAL FIELD**

[Field of the Invention] This invention relates to the recording medium which memorized the meter figure display and meter figure display program which can set up the size of a meter figure freely especially about the recording medium which recorded the meter figure display and meter figure display program which displays a meter figure.

## **PRIOR ART**

[Description of the Prior Art]The meter figure set by two kinds of half screens of 1/4 size of the full screen and the full screen for the purpose of the meter figure used for a plant monitoring device mainly being used at the time of start-up was made preparation.

[0003]Such a screen is shown in drawing 6. a is the full screen and b is a half screen. The screen shown in this figure is a control group window (screen), and the meter figure of two or more meters which the engineer set up is displayed. Thus, he is a meter figure of fixed size and did not need to be conscious of resolution etc.

[0004]It is considered as the kind of screen, in addition there are a face plate window and a tuning window. A face plate window displays only one meter figure of the meter which the operator called on the full screen. The meter figure of the meter in which the operator called the tuning window on the full screen and a half screen is displayed also including the detailed information of a meter.

## EFFECT OF THE INVENTION

[Effect of the Invention]According to this invention, there are the following effects. Since drawing data is called corresponding to scaling according to claims 1 and 6, the size of a meter figure can be changed. Since a meter figure can be arranged in a free position and size and a meter figure can use it also as multi-use parts on a graphic window, the engineering which suited a user's liking can be performed.

[0031]Since a font or a bit map is chosen corresponding to scaling according to claims 2 and 7, drawing does not collapse. That is, drawing of a meter figure does not collapse.

[0032]Since the horizontal-to-vertical ratio of the size of a meter figure was made immobilization according to claims 3 and 8, drawing of a meter figure can express as a fixed design. That is, since the design is constant, even if size is changed, it is easy to carry out recognition.

[0033]Since the meter figure of compact size was provided according to claims 4 and 9, a meter can be supervised without taking a space.

[0034]Since the size of a meter figure can be freed according to claims 5 and 10, a meter figure can be established in a graphic window etc. and the important surveillance of a meter figure can be performed. It can reply to the demand of a display of two or more screens in recent years.

## TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] Thus, the meter figure was designed in consideration of the time of start-up, and was unsuitable for using for the surveillance of a plant. That is, an operator is the graphic window displayed in the plant in the schematic diagram, and is usually supervising the plant. In order to have added and displayed the meter figure of the important meter on this screen, in the meter figure of a fixed size, there was a case where it was said that it cannot make it display on the crevice between the schematic diagrams of a plant.

[0006] Since a meter figure displayed in a fixed position and size on a fixed window, it was immobilization altogether, and it could not display general-purpose on graphics and the engineering which suited a user's liking was not able to be performed.

[0007] And in a screen display in recent years, a size is adjusted freely, two or more screens were displayed simultaneously, it was required that a plant should have been supervised and it was not able to fill this demand with the meter figure of fixed size.

[0008] Then, the purpose of this invention is to realize the recording medium which recorded the meter figure display and meter figure display program which can set up the size of a meter figure freely.

## MEANS

[Means for Solving the Problem]In a meter figure display which displays a meter figure on an indicator, this invention calls drawing data decided based on scaling directions, calculates a size, and has a display processing means which performs display processing to said indicator of a meter figure.

[0010]In such this invention, a display processing means calls drawing data decided based on scaling directions, calculates a size, and performs display processing to an indicator of a meter figure.

[0011]

[Embodiment of the Invention]This invention is explained using a drawing below. Drawing 1 is a lineblock diagram showing one example of this invention. In a figure, the control section 1 performs the surveillance and control of the plant 2. And the control section 1 displays various screens on the indicator (CRT) 4 with the drawing data memorized by the storage parts store 3 based on a monitored result. The control means 5 is a keyboard or a mouse, and operates the control section 1, for example.

[0012]The control section 1 consists of the supervisor control means 11 and the display processing means 12. Generally the control section 1 comprises a computer and, generally the supervisor control means 11 and the display processing means 12 are described by the program. And generally this program is installed in a computer from recording media (FDD, CD-ROM, etc.).

[0013]The supervisor control means 11 supervises the plant 2, and it controls the plant 2.

[0014]The display processing means 12 inputs the monitored result from the supervisor control means 11, calls the drawing data decided based on scaling directions from the storage parts store 3, calculates a size, and performs display processing to the indicator 4 of a meter figure. The display processing means 12 is also performing display processing of various screens.

[0015]Operation of such a device is explained below. Drawing 2 is the flow chart which showed

operation of the device of drawing 1. Drawing 3 is a figure showing the drawing data contrast table of the device of drawing 1. This drawing data contrast table is memorized by the storage parts store 3.

[0016]The control means 5 performs the kind of meter figure, change of size, or prior specification to the display processing means 12. The display processing means 12 judges whether a meter figure display is compact size (S1).

[0017]Based on the drawing data contrast table of the scale of a meter figure created corresponding to window size, it is judged at the time of compact size whether it is SL (Scale Large) window (S2). Based on the bit map and font of a drawing data contrast table, the drawing data of SL window of a compact meter figure is collected from the storage parts store 3 at the time of SL window (S3). When it is not SL window, based on the bit map and font of a drawing data contrast table, the drawing data of SM (Scale Mini) window of a compact meter figure is collected from the storage parts store 3 (S4).

[0018]When it is not compact size, based on the drawing data contrast table of the scale of a meter figure created corresponding to window size, it is judged whether it is SL window (S5). Based on the bit map and font of a drawing data contrast table, the drawing data of SL window of a meter figure is usually collected from the storage parts store 3 at the time of SL window (S6). When it is not SL window, based on the bit map and font of a drawing data contrast table, the drawing data of SM window of a meter figure is usually collected from the storage parts store 3 (S7).

[0019]And it is ratio immobilization of a meter figure in every direction after drawing data collection, and contraction scale calculation is performed on the basis of breadth, for example (S8). That is,  $\text{=(length after operation) (front [ operation ] length) (x (breadth at time of meter figure call)) / (breadth of a meter figure standard)}$  is calculated.

[0020]Each part article is drawn to the indicator 4 using drawing data and contraction scale calculation (S9). The display processing means 12 changes drawing (for example, a numerical value and a scale bar) of a meter figure by the monitored result by the supervisor control means 11.

[0021]Although the kind of SL window and SM window was established here, this is because the design was somewhat changed with window size. SL window is designed on the basis of 1024x768 dots of window sizes, and SM window is designed on the basis of 640x480 dots of window sizes. The difference in the design of this window is explained using drawing 4. a is a meter figure of SM window and b is a meter figure of SL window. Although, as for the difference in this window, meter figure b has the horizontal lines b1-b3, only the horizontal line a1 has meter figure a. Although it is a bit map, arrow l etc. of the size arrow l etc. are indicated to be to a drawing data contrast table are called as drawing data from the storage parts store 3, and are displayed on the indicator 4 by the display processing means 12.

[0022]Next, operation of this invention is explained using a concrete example. For example, when window size is for 1600x1200 dots and 1280x1024 dots, from a drawing data contrast table, as for a design, SL window is chosen, the number of bit maps is 24x24, and scaling of the font size is carried out according to size on the basis of 20. The drawing data based on this information is collected. And a contraction scale operation is performed and drawing is performed to the indicator 4.

[0023]The display example of a graphic window is shown in drawing 4. In a figure, a is a meter figure and b is usually a compact meter figure. Compact meter figure b is usually designed with one half of the dips of meter figure a, and usually loses the tag comment a1, the digital value (PV (process value), SV (preset value), MV (operated value)) a2, and the entry zone call button a3 from the meter figure a. Thereby, as for compact meter figure b, the display portion of a state is emphasized for the purpose of surveillance.

[0024]Thus, since the display processing means 12 calls drawing data corresponding to scaling, the size of a meter figure can be changed.

[0025]Since a meter figure can be arranged in a free position and size and a meter figure can use it also as multi-use parts on a graphic window, the engineering which suited a user's liking can be performed.

[0026]And since a font or a bit map is chosen corresponding to scaling, drawing does not collapse. That is, drawing of a meter figure does not collapse.

[0027]Since the horizontal-to-vertical ratio of the size of a meter figure was made immobilization, drawing of a meter figure can express as a fixed design. That is, since the design is constant, even if size is changed, it is easy to carry out recognition.

[0028]Since the meter figure of compact size was moreover provided, a meter can be supervised without taking a space. Since it can provide in a graphic window etc., without taking a space, an important meter can be supervised. And it can reply to the demand of a display of two or more screens in recent years.

[0029]This invention may not be limited to this and may be as follows. Although the composition which memorizes a drawing data contrast table to the storage parts store 3 was shown, it may include in the inside of the display processing means 12, and composition may be used.

## DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is a lineblock diagram showing one example of this invention.

[Drawing 2] It is the flow chart which showed operation of the device of drawing 1.

[Drawing 3] It is a figure showing the drawing data contrast table of the device of drawing 1.

[Drawing 4] It is a figure showing the display example of the device of drawing 1.

[Drawing 5] It is a figure showing the display example of the device of drawing 1.

[Drawing 6] It is a figure showing the display example of the conventional plant monitoring device.

[Description of Notations]

1 Control section

2 Plant

3 Storage parts store

4 Indicator

5 Control means

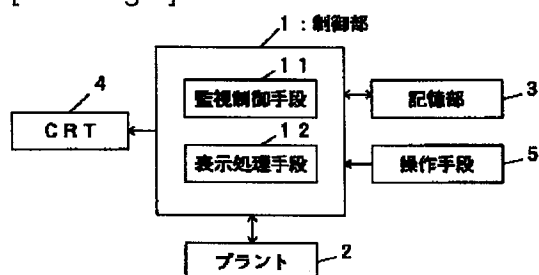
11 Supervisor control means

12 Display processing means



## DRAWINGS

[Drawing 1]



[Drawing 3]

|          |           |    |           |    |          |       |         |    |         |       |
|----------|-----------|----|-----------|----|----------|-------|---------|----|---------|-------|
| ウィンドウサイズ | 1600x1200 | >  | 1280x1024 | >  | 1024x768 | >     | 800x600 | >  | 640x480 | >     |
| ビットマップ   | 24x24     | ←  | ←         | ←  | ←        | 16x16 | ←       | ←  | ←       | 12x12 |
| フォント     | *1        |    |           |    | 20       | *1    |         |    | 16      | *2    |
| デザイン     | SL        | SL | SL        | SL | SL       | SL    | SL      | SL | SM      | SM    |

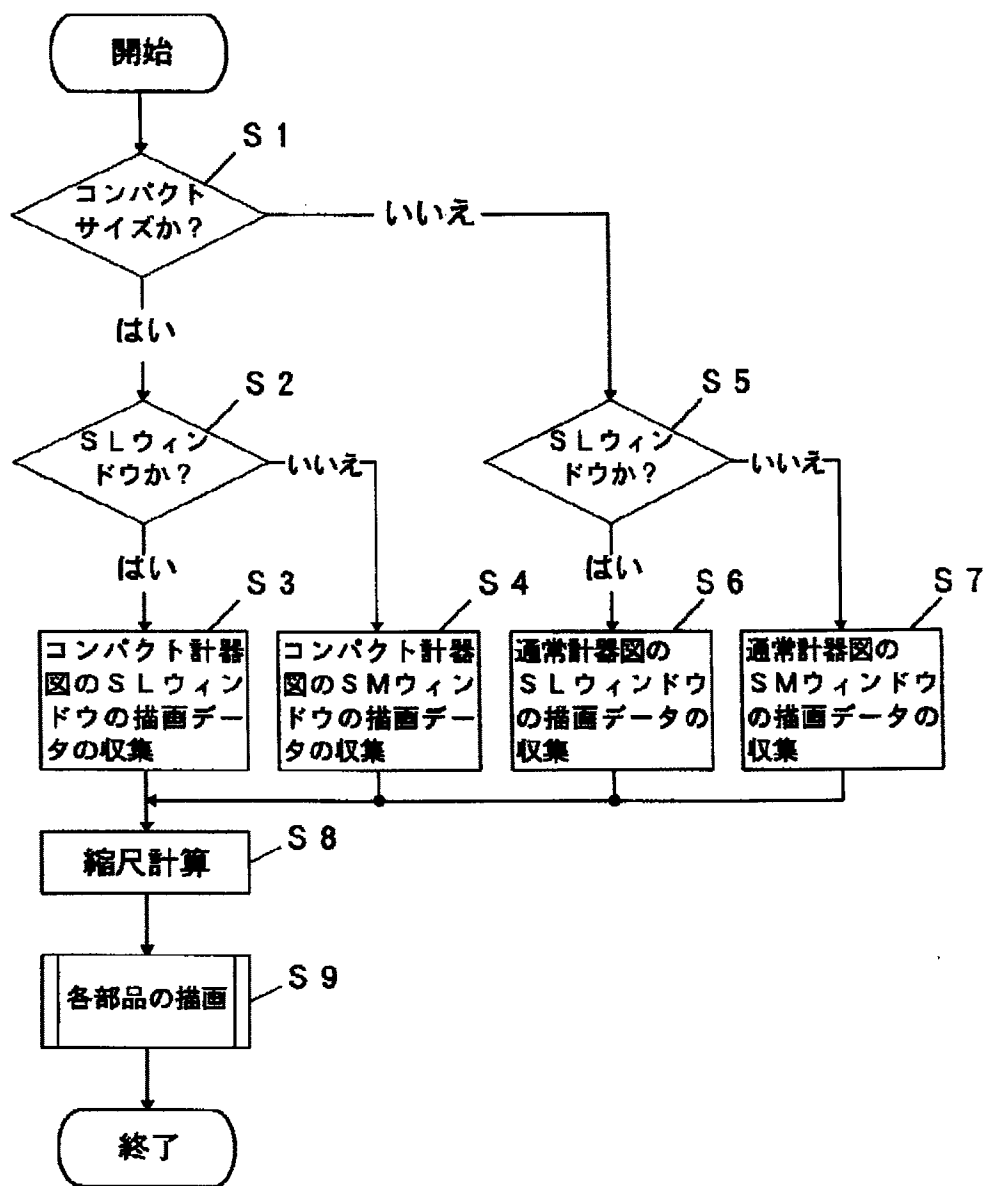
SL: ウィンドウのサイズが 1024x768 でデザインしたもの

SM: ウィンドウのサイズが 640x480 でデザインしたもの

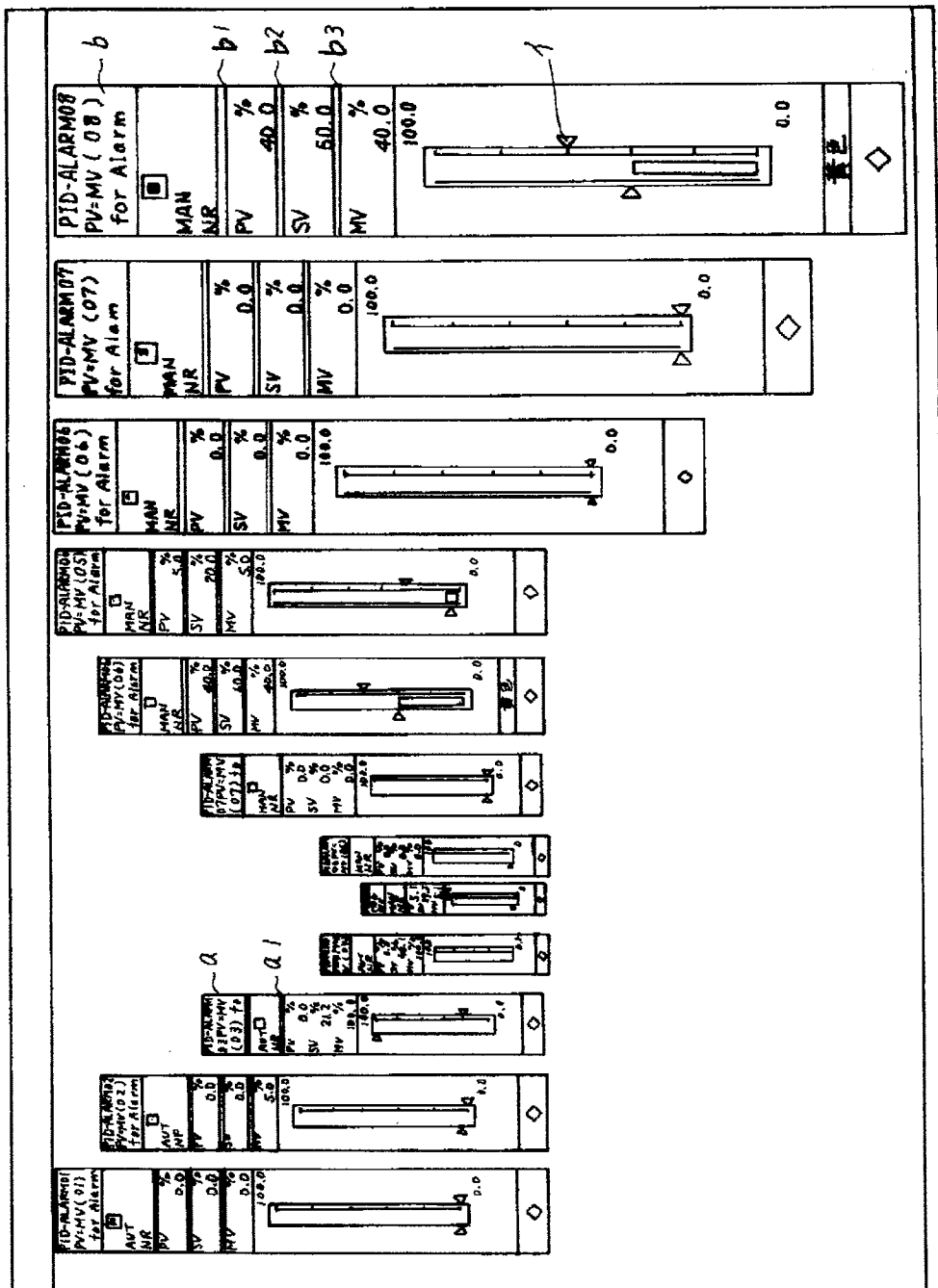
\*1: SL のときのフォントサイズ 20 を基準に計器図のサイズに応じてスケーリングする。

\*2: SM のときのフォントサイズ 16 を基準に計器図のサイズに応じてスケーリングする。

[Drawing 2]



[Drawing 4]



[Drawing 5]



